



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,130	12/18/2001	Mathew A. Rybicki	VIXS 034	5129
34280	7590	06/02/2006	EXAMINER	
TIMOTHY W. MARKISON			TSE, YOUNG TOI	
VIXS, INC.			ART UNIT	
P.O.BOX 160727			PAPER NUMBER	
AUSTIN, TX 78736			2611	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,130

Applicant(s)

RYBICKI ET AL.

Examiner

YOUNG T. TSE

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 14-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 14, 15 and 28-33 is/are allowed.
- 6) ☒ Claim(s) 1-4, 9, 16, 17, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 5-8, 18-21 and 24-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 06, 2006 have been fully considered but they are not persuasive:

Applicants argue that Wright is not teaching or suggesting a signal partitioning module that is operably coupled to partition the signal based on peak-to-average ratio of the signal to produce a plurality of signal partitions as in claim 1, but teaches generating two constant amplitude envelope phase varying signals that are compensated by the DSCP 21 to correct for differences between the two analog chains. Since Wright does not teach or suggest a signal partitioning module as is claimed in claims 1, 16 and 22, combining the teachings of Wright with Laroia as the examiner has stated fails to render claims 1, 16 and 22 obvious.

Applicants note claims 1-3, 9, 16-17 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Laroia, wherein 35 U.S.C. 103(a) states that a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made. Although Wright does not explicitly show or suggest that the transmitted signal 12 is generated from a

signal generator to generate a signal to represent data based on a first aspect of a transmission protocol and a peak-to-average ratio. Laroia discloses an OFDM power amplifier transmitter in Figure 1, wherein the digital input signal input to a digital to analog converter 6 through a mixer or up-converter 7, a power amplifier 8, and an antenna 9 is derived from a data input via a digital complex symbol generator 2, a Fourier transform operator 3, a cyclic prefix generator 4, and a filter 5. Laroia teaches the concept of using a multi-tone or OFDM signal to communicate information is relatively well understood, the existing techniques for transmitting such a signal tend to be inefficient in terms of power utilization. The power inefficiency results from the multi-tone signal being a sum of a plurality of single tone signals, which normally leads to a high peak-to-average ratio in the resultant multi-tone signal (paragraph [0009]). Laroia also teaches that the independent generation and processing of signals corresponding to different tones of a multi-tone signal provides advantages in terms of power efficiency over the known system since the individual signals tend to have a better peak to average power ratio than the signal of the known system which corresponds to multiple tones (paragraph [0023]). Therefore, it would have been obvious to one of ordinary skill in the art to include a signal generator in Wright's transmitter for transmitting the transmitted signal 12 prior the digital to analog converter 22 as taught by Laroia in order to generate symbols to a digital circuitry for performing digital signals prior the conversion the digital to analog converter.

Drawings

2. The drawings were received on March 06, 2006. These drawings are acceptable.

Claim Objections

3. Claims 20-27 are objected to because of the following informalities:

In claim 20 (line 11), claim 21 (line 8), claim 26 (line 12) and claim 27 (line 9), the phrase "the signal" should be "the plurality of signal partitions".

In claim 22, line 12, the phrase "the plurality of the amplifiers" should be "the plurality of amplifiers".

Claims 23-25 are objected to because they are depended upon claim 22.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-3, 9, 16-17 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Write et al. in view of Laroia.

Wright et al. (US Patent No. 6,313,703 B1) discloses a plurality of LINC power amplifiers shown in Figures 2, 3A, 3B and 12.

Referring to Figure 3B, the power amplifier comprises a signal component separator 11 receives a transmit signal 12 to provide a plurality of signals; a digital compensation signal processor 21 corresponds to the plurality of signals to provide a plurality of compensated signals; an adaptive control processing and compensation estimator 28 corresponds to the plurality of signals to generate a control signal to control the digital compensation signal processor 21; a digital to analog converter 22 converts the compensated signal into analog signal; RF up-converters 23 and 24 convert the analog signals into RF signals; amplifiers 15 and 16 amplify the RF signals into amplified signals; and an amplifier power combiner 25 combines the amplified signals into a composite signal for transmission.

With respect to claims 1, 16 and 22, the signal component separator 11, the digital compensation signal processor 21 and the adaptive control processing and compensation estimator 28 together correspond to the signal partitioning module coupled to the transmitted signal 12 to produce a plurality of signal partitions; the digital

to analog converter 22 and the up-converters 23 and 24 together correspond to the signal processing module coupled to process each of the plurality of signal partitions based on a second aspect of the transmission protocol to produce a plurality of processed signal partitions; the amplifiers 15 and 16 correspond to the plurality of amplifiers, wherein each of the plurality of the amplifiers amplifies corresponding one of the plurality of processed signal partitions to produce a plurality of amplified signal partitions; and the amplifier power combiner 25 corresponds to the transmitting module coupled to transmit the plurality of amplified signal partitions as a composite amplified signal.

Wright fails to show or suggest that the transmitted signal 12 is generated from a signal generator to generate a signal to represent data based on a first aspect of a transmission protocol and a peak-to-average ratio.

Laroia (US 2002/0176510 A1) discloses an OFDM power amplifier transmitter in Figure 1, wherein the digital input signal input to a digital to analog converter 6 through a mixer or up-converter 7, a power amplifier 8 and an antenna 9 is derived from a data input via a digital complex symbol generator 2, a Fourier transform operator 3, a cyclic prefix generator 4, and a filter 5. Laroia teaches the concept of using a multi-tone or OFDM signal to communicate information is relatively well understood, the existing techniques for transmitting such a signal tend to be inefficient in terms of power utilization. The power inefficiency results from the multi-tone signal being a sum of a plurality of single tone signals, which normally leads to a high peak-to-average ratio in the resultant multi-tone signal (paragraph [0009]). Laroia also teaches that the

independent generation and processing of signals corresponding to different tones of a multi-tone signal provides advantages in terms of power efficiency over the known system since the individual signals tend to have a better peak to average power ratio than the signal of the known system which corresponds to multiple tones (paragraph [0023]).

Therefore, it would have been obvious to one of ordinary skill in the art to include a signal generator in Wright's transmitter for transmitting the transmitted signal 12 prior the digital to analog converter 22 as taught by Laroia in order to generate symbols to a digital circuitry for performing digital signals prior the conversion the digital to analog converter.

In addition to claim 22, the signal component separator 11 and the digital compensation signal processor 21 are integrated in a real time processor and the adaptive control processing and compensation estimator 28 is integrated in a digital signal processor including software and memories (see Figure 13). Therefore, it would have been obvious to one of ordinary skill in the art that the processor and memories included in the adaptive control processing and compensation estimator 28 are capable of performing the operation of the plurality of signal partitions, the plurality of processed signal partitions, the plurality of amplified signal partitions, and the composite amplified signal.

With respect to claims 2, 17 and 23, Laroia clearly shows that the signal generator for generating a signal to the digital to analog converter 6 comprises the digital complex symbol generator 2, the Fourier transform operator 3 and the filter 5.

With respect to claim 3, when the power transmitter shown in Figure 3B is used in a wireless communication system, it is obvious to one skill in the art that an antenna is required for transmitting the composite amplified signal, for example, to a wireless receiver circuit.

With respect to claim 9, although Wright does not explicitly show or suggest that each of the amplifiers 15 and 16 is a class A power amplifier having a selected output impedance. It is well known to a person skill in the art or the choice of design that a class A type power amplifier could be used in Wright's power amplifier transmitter if a selection of output impedance is needed.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. in view of Laroia as applied to claim 2 above, and further in view of Arntz.

Wright fails to show or suggest that the combined amplified signal is coupled to a plurality of antennas as recited in claim 4 for transmission.

Arntz (US Patent No. 5,646,631) discloses a power sharing amplifier network 22 and a redistribution circuit 24 in Figure 12 for transmission through a plurality of antennas 120-1 to 120-N.

Therefore, it would have been obvious to one of ordinary skill in the art to use a plurality of antennas in Wright's power amplifier transmitter for transmitting each of the power amplifier 15 and 16 to an individual antenna for transmitting the amplifier signals separately from each of the power amplifier as taught by Arntz in order for a receiver to select one of the strongest signal from one of the antennas.

Allowable Subject Matter

8. Claims 5-8 and 18-19 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
9. Claims 20-21 and 24-27 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
10. Claims 10, 14-15 and 28-33 are allowed.

Conclusion

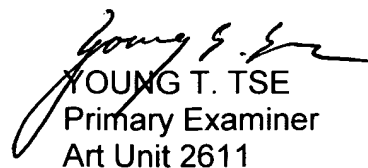
11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUNG T. TSE whose telephone number is (571) 272-3051. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


YOUNG T. TSE
Primary Examiner
Art Unit 2611